

“Optimizing Hydration: Strategies for Healthy Adults of Varied Activity Levels”

Webinar Questions Answered by Kelly Jones, MS, RD, CSSD, LDN

Please note that these are brief answers to complex questions and are not meant as medical advice. Please seek medical advice from your personal healthcare professional for more complete information.

- What happens when the potassium upper limits are surpassed?

There is no set upper limit for potassium. I am assuming this is meant to relate to magnesium. At above 350 mg of supplemental magnesium, there may be some osmotic effects in the lower intestines with not all of it being absorbed, leading to cramping and diarrhea. Some laxative supplements contain high doses of magnesium for this reason though, and some people experience diarrhea or loose stools with lower doses of some forms of magnesium, too.

- For patients on proton pump inhibitors, what is the maximum supplemental range?

I am not aware of a different UL for those on proton pump inhibitors and would leave the recommendation of how much to supplement with to their gastroenterologist. Since they can decrease magnesium absorption, it's important they understand the risks of cramping and diarrhea, which may be heightened vs someone not on a PPI.

- How do you feel about LMNT or Redmond Re-Lyte for hydration both on active days and non-active days?

I think less about the specific day and more about overall weekly training/time active in the heat when it comes to nutrition recommendations. They may consume more on training days during exercise, but if someone has a very high activity level and only one rest day per week, I look at that rest day as an opportunity to catch up on what they may have missed on heavy training days. However, if it's someone only exercising under an hour 3 days per week, I think LMNT and related are excessive for rest days. Exceptions of course are when acclimating to hot environments or if someone maybe is outside all day gardening, at the beach, active for work etc.

- How does one know if s/he is consuming enough sodium if they try to be careful about it?

I think 3 day food logs can be beneficial if it's a situation like this. If you have someone who rarely ever dines out and all meals are prepared from scratch, plus they are “careful about it”, they may not be adding any to their meals. However, some people who try to be careful may be eating things like sprouted whole grain bread without realizing it's a higher sodium packaged food. To get specific with recs we need to be specific with our evaluations or how we recommend they evaluate their intake if you don't have the time to help given your clinical role. Something as simple as myfitnesspal for a few days can work (and will give their potassium info too!).

- The American Heart Association says we need less than 500 mg of sodium daily to function properly. They recommend a max of 1,500 mg vs. this being the minimum that you mentioned. However, they mention this may not be recommended for athletes/heavy sweaters. Do you think people who aren't sweating much can safely consume less than 1500 mg sodium/day?

They are actually in line with the government recommendations of an AI at 1500 mg and max of 2300 mg. They recommend the amounts you listed for older adults with heart disease. Again, we need to remember most recommendations are for the average adult, who is pretty sedentary. Consider additional amounts for not only exercise and active work, but also discussing having more situationally (during heat waves, the first few hot days of a season, when traveling, etc)

<https://www.heart.org/en/health-topics/high-blood-pressure/changes-you-can-make-to-manage-high-blood-pressure/shaking-the-salt-habit-to-lower-high-blood-pressure>

- Do you see a lot of increased pain w/dehydrated athletes? In the hospital setting, we know it plays a factor.

Great question - anecdotally without looking at studies, I think athlete's pain tolerance may be a bit different than those who are more sedentary and in the hospital. And from a science perspective, endorphins from exercise do alter pain thresholds.

- How does hydration impact mental health for autoimmune disorders? Any thoughts or research there?

I have not personally seen research there, but given dehydration impacts depression, anxiety, and self-esteem in varied groups, I would assume it can have a meaningful effect in those with autoimmune disorders, too.

- What are optimal ways to hydrate other than water to ensure enough electrolytes?

As mentioned with my slides on the non-sodium electrolytes, for most people we need a better food first approach. Increasing intake of whole plant foods and fish can enhance intake of potassium, magnesium and zinc, and whole plant foods and dairy increase intake of calcium. When it comes to sodium, in addition to adding electrolyte products or salt to water, we can increase intake of seafood and some pickled/fermented foods.

Potassium: potatoes, sweet potatoes, avocado, mango, tomatoes, leafy greens, whole grains, beans and lentils, watermelon, coconut, squash, fatty fish

Magnesium: pumpkin + chia seeds, beans, whole grains, peanuts, almonds, cashews, soy products (edamame, tofu, milk, tempeh), salmon, dark chocolate, potatoes

Zinc: Shellfish, hemp hearts, cashews, pumpkin seeds, oats, chickpeas

Calcium: dairy, nondairy fortified beverages, bok choy, cruciferous veggies, almonds, tahini, beans, figs

- Regarding the efficiency of hydration, does sipping fluids vs. drinking quickly make a big difference?

It depends on what someone considers "drinking quickly". When we sip water to prevent thirst throughout the day, we're getting smaller doses that support replenishment of the body's natural losses and don't push our fluid balance reactions much. Taking in a large amount at once - think chugging 12-16 ounces in a couple of minutes - will increase blood volume quickly, diluting solutes and activating hormones that want us to flush the fluid out to get back to a healthier balance.

- For a general 'healthy active adult, male or female,' what do you recommend for the carb and protein nutrient % breakdown from a perspective of not restricting carbohydrates as many fad nutrition sources suggest?

I recommend no less than 45% calories from carbs and 15-30% from protein for most people. For athletes, carbs up to 65% and protein in the 20-30% range.

- What are your thoughts on the latest “hydrogenated” water trend?

Not evidence based! While there are a couple of studies saying it helps reduce inflammation, there are more studies showing no effect. Waste of money for most people who just need to focus on getting more quality nutrition. With 90% of americans not meeting fruit and vegetable recs, I would recommend to almost anyone to focus on getting another serving of veggies before investing effort and money into hydrogenated water.

- The urine colors with water in the toilet or just urine color alone?

In the toilet is fine, no need to have people pee in a cup or anything!

- In the fluid loss equation, what does the 16 represent?

16 ounces (there are 16 ounces in one pound)

- What foods/ beverages do you like to recommend for people to ensure adequate replenishment of fluids and electrolytes?

See slide 33 for fluids and above question for electrolytes

- Can you comment about the water content of fruits and vegetables vs. fluid needs, not just as needs?

I am not sure exactly what this question is referring to, so my best answer is that we have total fluids needs for the body that take into account our food intake (not just produce, also hydrated foods like pasta/oats, yogurt, etc) as well as a total fluid need that is based on assumption of how much one would get from foods each day. The fluid need is really the amount just from fluids, not foods too.

- "Why do you think 8 cups of water is insufficient for most people? With that being said- How is the DRI for fluid determined?

DRIs are set based on an abundance of clinical studies and clinical symptoms (eg: dehydration). <https://www.ncbi.nlm.nih.gov/books/NBK465020> 30-35 ml/kg is a more accurate personalized fluid need range; for a sedentary 150 lb person, 8 cups may be sufficient, but for someone much larger or more active, it would not be. And as covered in the lecture, remember additional recommendations for varied environments and acclimatization periods.

- I had a pelvic floor physical therapist tell me people probably don't need 8 cups of water. I didn't really understand why, though. She mentioned that nephrologists or urologists say the recommendation of 8 cups is too high. What are your thoughts?

See above! I can understand they don't want people peeing excessively, however I know my Pelvic PT

promotes greater fluid intake than that to her audience as constipation is very problematic for the pelvic floor.

- Regarding pee color, is that reliable for someone with kidney disease?

I am not a renal specialist, but would imagine there are other factors to consider there!

- I've seen a quoted study stating that optimal sodium intake is between 4,000 and 6,000 mg/day. Is it fair to say that this recommendation would only be appropriate for the groups you mentioned, not just the average person?

Are you sure it wasn't that 4,000-6,000 mg is the average amount Americans currently ingest? Because that is the case! In my opinion based on lots of evidence and a couple of decades attending conferences where hydration is discussed, the average person absolutely should not take in that level of sodium without a high activity level or heat/environmental related factors.

- Does it make sense to recommend a sports drink to the elderly who don't drink enough and don't eat a lot of fruit/vegetables (thinking about electrolyte deficiencies)

Added sugar intake is absolutely different than natural sugar intake. Could you instead recommend a fruit juice or green juice diluted with water and anywhere from a pinch to ⅛ tsp of salt? Definitely consider heart health and overall diet here before making sodium recommendations.

- Is Nuun a good electrolyte mix?

Nuun is fine, I enjoy it when I travel as an added electrolyte "boost" or for shorter workouts sometimes.

- Many of my patients ask if soda water can replace regular still water. What are your thoughts on this?

Yes! Just as long as it's truly soda water/seltzer vs. a beverage with added sugar or other additives that may make the product more acidic. The latter would still count as fluid, but if someone "doesn't like" water and is almost solely drinking carbonated beverages with acidic additives, it may have potential to impact bone health.

- Curious, what are your thoughts on athletes' w/ POTS w/ fluid/salt intake?

Anyone with POTS may require very high sodium vs. the "healthy" populations discussed in this webinar! It will need to be individualized based on the person's severity, but starting at 3,000-4,000 mg per day is what I have seen.

- Would love to hear Kelly's thoughts on Liquid IV?

Fine as an electrolyte replacement and carb replenishment option for active people exercising over an hour. For athletes in training, it's a bit lower calorie than what they should be taking in, so they would need to supplement with another sports product such as a gel or blocks, or could do a honey shot etc.

- What electrolyte product is adequate for the average human? i.e., working in the office and walking after work

For someone walking less than an hour in moderate temperatures and at a seated job, I wouldn't recommend a high sodium product like LMNT for example. Instead, I'd recommend adequate carbs and fluids throughout the day, adequate electrolytes in food, and a small carbohydrate snack before the walk with water to support energy levels before dinner.

- Are there any benefits to hydration supplements before/after alcohol intake?

We absolutely see electrolyte imbalances with excess alcohol intake and that will be exacerbated in the heat/summer (the time this webinar was presented). I did find a [small study](#) showing positive effects of electrolytes on hangover reduction, but note it seems a specific product is funding the study. What's challenging here is even acute intake of excess alcohol can increase blood pressure even though it can decrease blood volume. At the same time, I would assume sodium and lower sugar sports drinks (like Hydroboost, liquid IV, Skratch) helps to support better hydration while drinking alcohol or the day after as they are supporting hydration. What's better though is encouraging intake of a balanced meal before/while drinking with adequate fiber rich starch, protein and healthy fats to reduce BAC responses to alcohol. Then, the day after, including adequate carbs to help if dealing with the hypoglycemic effects of alcohol intake, along with (again) fiber and protein to balance blood sugar responses.

- If someone has hypertension, how much Gatorade is acceptable to consume when exercising in the heat for a long duration?

This will vary person to person depending on their blood pressure, whether they're on a medication, how long they are exercising for and whether they have a high or low fitness level. If they aren't exercising for over an hour, I'd start with more adequate pre and post workout snacks that provide nutrient dense carbs and electrolytes.

- What does it mean to sweat efficiently, specifically for women? Are you saying they lose it quicker or that they don't lose adequate salt with it?

Great opportunity for clarification on the way I worded that. Women will (generally) be more efficient at thermoregulation to start, reserving fluid for longer, and needing their core temp to increase more before starting to sweat. Men will start sweating and releasing heat sooner.

- What are the product recommendations regarding electrolyte products? Is this on the last slide?

Slide 37 has products, but I do not recommend them all! For example, regular body armour is essentially a watered down fruit juice with some added vitamins and Ultima is so low in sodium it should not be promoted for electrolyte replenishment. I most often recommend: nuun, Skratch daily hydration and NOW effervescent tabs for electrolytes for the average person and LMNT for heavy salt sweaters who are active and replenish adequate carbs in other ways. For sodium and moderate carbs, hydroboost, Skratch hydration, liquid IV and Gatorlytes bottled are common recs. Skratch also has an endurance as does tailwind, with more carbs and sodium.

- Any hydration recommendations for patients on diuretics?

I will defer this to their cardiologists as that is very nuanced based on their individual health!

- Is there a concern about too much Gatorade for an active person? Should it be diluted?

It depends on level of activity. We want to replenish 30-60 grams of carbohydrate per hour during activity for those exercising over an hour, up to 3 hours. Sodium in your traditional gatorade is actually lower than I recommend to my athletes or those exercising for over an hour. Their gatorlytes bottled is now available in more stores and more adequate in sodium with a bit less carbs, similar to Hydroboost, liquid IV, Skratch.

- When is it appropriate to put someone on a fluid restriction for low sodium? Before trying, what else can you try to bring up serum sodium levels?

Of course you would need to start with increased sodium intake before restricting fluids. See above re: POTS recs starting at 3000-4000 mg/day and in some cases 10000 mg!

- Do we absorb any sodium/minerals from being in the ocean?

I do not believe the ions would pass through skin in significant amounts to alter dietary needs.

- How long does it take for us to absorb sodium during activity? For example, after taking a salt stick, fast chew?

As soon as 5 minutes after ingestion

- Does chronic dehydration activate the sympathetic nervous system?

It depends on the level of dehydration - see chart on slide 17 and also note the anxiety / depression stats

- Any input on recommendations for patients in cardiac rehabilitation regarding sodium?

Unfortunately that is not only not my specialty but also needs to be individualized and trial and error with monitoring may be required.

- Is there an appropriate use for a low carbohydrate, low sodium electrolyte replacement? I have never been a fan and feel like if I need electrolytes, I need the carbs and sodium too."

If someone is eating adequately to replenish carbohydrates from food and does not need to replace them during exercise, they could use a replacement that is low carb, but not low sodium. If it's low in both, I agree it is more of a way to flavor water and absolutely not a sports drink or hydration beverage (ex: Ultima, Prime).

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